2. Code Quality

Program Name: CodeQuality.java Input File: codequality.dat

It is your first day on the job at Facebizzle, and you cannot wait to sit down and write some code. However, Facebizzle uses the esoteric Flowjure language, which is a variant of LISP, and is heavy on the use of parentheses, brackets, and braces. Since you are new to writing Flowjure, you want to write a helper script to check if your Flowjure is valid and compute some statistics on our code.

The most important characters in Flowjure are `(`, `[`, `{`, `}`, `]`, and `)`. In order to be a valid Flowjure program, each the different types of parentheses must be balanced. Every opening parenthesis must be closed with the appropriate character in reverse order. For example, `([])` is balanced, but `{[}]` is not balanced, since the `[` is closed with the `}` character.

Input

The file begins with an integer `T` `(1 ≤ T ≤ 10)`. After that, `T` test cases follow. Each test case begins with an integer `N`, `(1 ≤ N ≤ 30)`. `N` is the number of lines of code. After that follows `N` lines of Flowjure code. Flowjure code can contain any characters, but the script that you are writing ignores non-parenthesis characters.

Output

If the code block is valid Flowjure, print "`YES A () B [] C {}`", where A, B, and C are the number of parenthesis, square brackets, and curly braces respectively. If the code block is not valid Flowjure, print "`NO X`" where X is the 0-based index of the first character that makes the code invalid. Ignore newlines when calculating this value. If it is impossible to detect that the code is invalid until the end of the program, print "`NO -1`".

Example Input File

```
3
1
(map #(str "Hello " % "!" ) ["Ford" "Arthur" "Tricia"])
3
(apply map vector [[:a :b :c]
                   [:d :e :f]
                   [:g :h :i]])
2
def fib (cons 1 (cons 1
    (lazy-seq (map + fib (rest  fib))))))
```

Example Output to Screen

```
YES 4 () 2 [] 0 {}
YES 2 () 8 [] 0 {}
NO 63
```

Explanation of Example Output

The last example input is missing an opening parenthesis, but we can't detect this until character 63. The other two inputs are valid Flowjure programs.